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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,114	04/16/2004	Hiroyuki Kitsunai	500.40633VX1	7716

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EXAMINER	
KACKAR, RAM N	
ART UNIT	**PAPER NUMBER**
1763	

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/825,114	KITSUNAI ET AL.	
	Examiner	Art Unit	
	Ram N. Kackar	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 3-7 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 3-7 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *none*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/14/2005 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al (EP 0709877 A1) in view of Pirkle et al (US Patent No. 5,846,373).

Saito et al teach a plasma etching apparatus (Fig. 1) comprising:

an etching chamber 11 (etching treatment room);

an electrostatic substrate stage 21, for placing a semiconductor substrate 20 thereon, installed in the etching treatment room 11;

a magnetron 16 (plasma generating means) for generating plasma in the etching treatment room; and

a gas inlet including a flow-rate controller 15 (gas introducing means) for introducing an etching gas into the etching chamber 11 (column 3, lines 11-43) and adapted to discharge charges stored,

wherein an etching gas such as HBr is supplied for an etching process (a treating gas for etching) and a cleaning gas such as O_2 is supplied for removing reaction product deposits inside the chamber (a treating gas for decomposing and removing etching products) (column 3, line 44 through column 4, line 19).

Saito et al disclose cooling for substrate through electrostatic chuck and also disclose temperature of the wafer for a process step (page 5 lines 41-43) but do not explicitly disclose temperature control of the substrate stage.

Saito et al also fail to teach a monitoring device (means) for monitoring a retained amount of etching products.

Pirkle et al teach a plasma processing apparatus (Figs. 1A, 1B) for multi step process on a substrate clamped electrostatically on a stage which has temperature control (Col 4 lines 44-47, Col 5 lines 20-35) and comprising a photo-detectors 48, 50 for monitoring emission intensity of

light emitted during a processing step such as during in-situ cleaning step (column 5, line 66 through column 6, line 54).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the monitoring system as taught by Pirkle et al in the apparatus of Saito et al in order to monitor the status of the processing during an etching or a cleaning step.

Regarding temperature control it would be obvious to one of ordinary skill in the art at the time of invention to have temperature control as per the teaching of Pirkle et al in order to have consistent process as temperature control is a parameter affecting plasma etch or deposition process.

Further regarding the substrate being etched during the two process step: the gas sources in the apparatus of Saito et al are controlled separately, thus, the gas sources are capable of being controlled such that the gas sources introduce a gas composition comprising HBr in a first step and introduce a gas composition comprising HBr and O_2 in a next step.

It has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley,* 120 USPQ 528, 531, (CCPQ 1959); "Apparatus claims cover what a device is, not what a device does" (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.,* 15USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim *Ex parte Masham,* 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see MPEP 2114.

The particular type of gas used is a process limitation rather than an apparatus limitation, and the recitation of a particular type of gas does not limit an apparatus claim, see *In re Casey,* 152 USPQ 235; *In re Rishoi,* 94 USPQ 71; *In re Young,* 25 USPQ 69; *In re Dulberg,* 129 USPQ 348; *Ex parte Thibault,* 64 USPQ 666; and *Ex parte Masham,* 2 USPQ2d 1647.

This rejection is based on the fact the apparatus structure taught above has the inherent capability of being used in the manner intended by the Applicant. When a rejection is based on the inherency, a rejection under 35 U.S.C. 102 or U.S.C. 103 is appropriate. (See *In re Fitzgerald* 205 USPQ 594 or MPEP 2112).

Response to Arguments

Applicant's arguments filed 4/14/2005 have been fully considered but they are not persuasive.

In the their arguments Applicants are relying on functional limitations of these claims and argue that in Saito cleaning step is conducted separately from the etching treatment. As has been discussed above the apparatus claims must be distinguished from the prior art in terms of structure rather than function. As Saito discloses multi step etch and plurality of gases it has been disclosed beyond doubt that the apparatus as disclosed is capable of the claimed function.

Even though examiner has not relied upon art related to functional limitation, prior art is known to discloses process for multi step etch without separate cleaning step.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Qian et al (US 6699399) disclose multi step etch with cleaning step built in without resorting to separate cleaning step has been known in the prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ram Kackar AU1763